

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

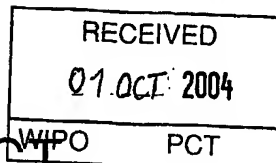
Applicant's or agent's file reference P11088WO/JSH	<b>FOR FURTHER ACTION</b>	See item 4 below
International application No. PCT/GB2004/002578	International filing date ( <i>day/month/year</i> ) 17 June 2004 (17.06.2004)	Priority date ( <i>day/month/year</i> ) 20 June 2003 (20.06.2003)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant DELPHI TECHNOLOGIES INC.		

1.	This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).																								
2.	<p>This REPORT consists of a total of 8 sheets, including this cover sheet.</p> <p>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.</p>																								
3.	<p>This report contains indications relating to the following items:</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 60%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>	<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input checked="" type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input checked="" type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
<input checked="" type="checkbox"/>	Box No. I	Basis of the report																							
<input checked="" type="checkbox"/>	Box No. II	Priority																							
<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability																							
<input checked="" type="checkbox"/>	Box No. IV	Lack of unity of invention																							
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement																							
<input type="checkbox"/>	Box No. VI	Certain documents cited																							
<input type="checkbox"/>	Box No. VII	Certain defects in the international application																							
<input type="checkbox"/>	Box No. VIII	Certain observations on the international application																							
4.	The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).																								

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No. +41 22 740 14 35	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Date of issuance of this report 03 January 2006 (03.01.2006)</td> </tr> <tr> <td style="padding: 2px;">Authorized officer  Nora Lindner</td> </tr> <tr> <td style="padding: 2px;">Telephone No. +41 22 338 89 65</td> </tr> </table>	Date of issuance of this report 03 January 2006 (03.01.2006)	Authorized officer  Nora Lindner	Telephone No. +41 22 338 89 65
Date of issuance of this report 03 January 2006 (03.01.2006)				
Authorized officer  Nora Lindner				
Telephone No. +41 22 338 89 65				

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY



PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY  
(PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/GB2004/002578

International filing date (day/month/year)  
17.06.2004

Priority date (day/month/year)  
20.06.2003

International Patent Classification (IPC) or both national classification and IPC  
F02M63/02, F02M55/02, F02M59/10

Applicant  
DELPHI TECHNOLOGIES INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☒ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

## 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office - P.B. 5818 Patentlaan 2  
NL-2280 HV Rijswijk - Pays Bas  
Tel. +31 70 340 - 2040 Tx: 31 651 epo nl  
Fax: +31 70 340 - 3016

Authorized Officer

Nobre, S

Telephone No. +31 70 340-4635



BEST AVAILABLE COPY

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/GB2004/002578

---

**Box No. I Basis of the opinion**

---

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

BEST AVAILABLE COPY

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/GB2004/002578

---

**Box No. II Priority**

---

1. ☒ The following document has not been furnished:
- ☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).
  - ☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).
- Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.
2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.
3. Additional observations, if necessary:

---

**Box No. IV Lack of unity of invention**

---

1. ☐ In response to the invitation (Form PCT/SA/206) to pay additional fees, the applicant has:
- ☐ paid additional fees.
  - ☐ paid additional fees under protest.
  - ☐ not paid additional fees.
2. ☒ This Authority found that the requirement of unity of invention is not complied with and chose not to invite the applicant to pay additional fees.
3. This Authority considers that the requirement of unity of invention in accordance with Rule 13.1, 13.2 and 13.3 is
- ☐ complied with
  - ☒ not complied with for the following reasons:  
**see separate sheet**
4. Consequently, this report has been established in respect of the following parts of the international application:
- ☐ all parts.
  - ☒ the parts relating to claims Nos. 1-7, 10-13, 16, 17

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/GB2004/002578

---

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

---

**1. Statement**

Novelty (N)	Yes: Claims	1-7, 10-13, 16, 17
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-7, 10-13, 16, 17
Industrial applicability (IA)	Yes: Claims	1-7, 10-13, 16, 17
	No: Claims	

**2. Citations and explanations**

**see separate sheet**

BEST AVAILABLE COPY

## Non-Unity

This Authority considers that there are 2 inventions covered by the claims indicated as follows:

- I: Claims 1-7, 10-13, 16 and 17 directed to an arrangement of two accumulators and a plurality of unit pumps in a common accumulator housing.
- II: Claims 8, 9, 14 and 15 directed to a valve arrangement for injecting fuel at two different injection pressures

The reasons for which the inventions are not so linked as to form a single general inventive concept, as required by Rule 13.1 PCT, are as follows:

Examining the possible correspondence by technical effect, one finds that the technical effect of the first invention is to provide a cooling effect to a fuel accumulator and at the same time to use the less external elements as possible.

The technical effect of the second invention is to provide a fuel system which can inject fuel at two different injection pressures.

This appears to show lack of corresponding technical effect, consequently, neither the objective problem underlying the subjects of the claimed inventions, nor their solutions defined by the special technical features allow for a relationship to be established between the said inventions, which involves a single general inventive concept.  
*(Achieving a high injection pressure in a common rail is a general objective of any fuel injection system manufacturer).*

In conclusion, the groups of claims are not linked by common or corresponding special technical features and define two different inventions not linked by a single general inventive concept.

The application, hence does not meet the requirements of unity of invention as defined in Rules 13.1 and 13.2 PCT.

The applicant is requested to either restrict the claims to one invention or to file additional examination fees for the further searched inventions. Should no further fees be paid, the examination will be restricted to the first or main invention.  
In order to accelerate the procedure the written opinion relating to the main invention can already be given.

**Re Item V.**

- 1.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject matter of claims 1 does not involve an inventive step in the sense of Article 33(3)PCT.

- 1.1.1 Document DE 101 36 925 C (D1), which is considered to represent the most relevant state of the art to the subject matter of claim 1, discloses (cf. paragraphs [0019-0034], figs. 1-5):

A fuel system for supplying pressurised fuel to a plurality of fuel injectors, the fuel system comprising;

an accumulator assembly having first and second accumulator volumes (21, 19) defined within a common accumulator housing (46),

supply means (see paragraph [023]) for supplying fuel at a supply pressure level to the first accumulator volume (21),

a plurality of pump plungers for receiving fuel at the supply pressure level from the first accumulator volume (21) and for pressurising said fuel to an injectable pressure level for supply to the second accumulator volume (19),

wherein each pumping plunger (50) pressurises fuel within an associated pump chamber (12) and being integrated with a common housing (46, 47, 3) so as to permit communication between the first accumulator volume (21) and the pump chamber (12) internally within a common housing (46, 47, 3).

- 1.1.2 The subject-matter of independent claim 1 differs from the disclosure of D1 in that :  
The fuel system comprises a plurality of unit pumps which are integrated with the accumulator housing.
- 1.1.3 The problem to be solved by the present invention may therefore be regarded as to provide a cooling effect to a fuel accumulator and at the same time to use the less external elements as possible.

1.1.4 Although not comprising a plurality of unit pumps which are integrated with the accumulator housing, the fuel system described in document D1 solves exactly the same problem as the one claimed by the applicant. Moreover the above distinguishing feature is described in document US 5 806 494 A (D2), (cf. col. 2, line 11 to col. 5, line 4, figs. 1-3) as providing the same advantages as in the present application. The skilled person would therefore regard it as a normal design option to include this feature in the fuel system described in document D1 in order to solve the problem posed.

1.2 Although claims 1 and 16 have been drafted as separate independent claims, they appear to relate effectively to the same subject-matter and to differ from each other only with regard to the definition of the subject-matter for which protection is sought. The aforementioned claims therefore lack conciseness and as such do not meet the requirements of Article 6 PCT.

An inventive step objection similar to one made in paragraph 1.1 can therefore apply also to claim 16.

2. Dependent claims 3-7, 10-12 and 17 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step (Article 33(2) and (3) PCT), because the features of claims 2 and 13 are disclosed in document D2, (cf. col. 2, line 11 to col. 5, line 4, figs. 1-3) and the features of claims 3-7, 10-12 and 17 are disclosed in document D1, (cf. paragraphs [0019-0034], figs. 1-5).

BEST AVAILABLE COPY